

TOSIN AKINWOYE

Simulation Engineer | AI & ML Engineer | Technical Director

oluwatosinakinwoye@yahoo.com | +44 7575 024374 | tosinakinwoye.com
uk.linkedin.com/in/akinwoyet |

PROFESSIONAL SUMMARY

Senior technical engineer with 10+ years of production experience building physically accurate simulation systems, GPU-accelerated rendering workflows, and procedural tooling across studios in Canada and the UK. Recently completed an MSc in Artificial Intelligence (Northumbria University, 2026), undertaken remotely alongside an active Senior FX TD contract, demonstrating the ability to operate across both disciplines simultaneously. Formal AI/ML training spans multi-agent LLM systems, NLP pipelines, supervised ML, agentic workflow design, and IoT deployment. Combines deep technical foundations in C++, Python, and GPU architectures with practical AI project delivery. Seeking roles in simulation engineering, applied ML, AI tooling, or technical R&D at European tech companies - open to relocation across the EU and UK.

TECHNICAL SKILLS

Programming Languages: Python, C/C++, VEX (GLSL-adjacent GPU shading language), HScript
AI / ML: Multi-agent system design, LLM orchestration (OpenAI API), Pydantic structured outputs, diffusion models, VLM evaluation, LoRA fine-tuning, agentic workflow frameworks (Flowise AgentFlow), NLP (NLTK, VADER, TF-IDF, Word2Vec, lemmatisation, tokenisation), supervised ML (Logistic Regression, SVM, Naive Bayes, XGBoost), cloud ML pipelines, IoT sensor systems (Arduino, Edge Impulse, ThingSpeak)
Data & ML Libraries: scikit-learn, pandas, NumPy, Gensim, NLTK, matplotlib, seaborn, XGBoost
APIs & Integration: OAuth2 authentication, REST APIs (Amadeus, Foursquare, Stripe sandbox), prompt engineering for structured data extraction
Simulation & Physics: Fluid dynamics (FLIP/SPH), rigid body dynamics, particle systems, cloth/constraint solvers, large-scale destruction, procedural geometry
Rendering & GPU: Physically-based rendering, ray tracing, shader authoring, render farm pipeline management, Mantra, Arnold, Redshift, Karma, PRMan
Tools & Platforms: Houdini, Maya, Nuke, Katana, Linux, Git
Operating Systems: Linux (primary), macOS, Windows

EDUCATION

MSc Artificial Intelligence Technology - Northumbria University, UK (May 2026) Modules: Programming for AI · Machine Learning on the Cloud · AI for Internet of Things · Information Governance & Cyber Security · Contemporary Computing & Digital Technologies · Leadership in a Digital Age

Dissertation: A Scene-Aware, Feedback-Driven Approach to Intelligent Video Generation Using Multi-Agent Planning - Five-layer AI pipeline combining multi-agent Chain-of-Thought planning (Director, Storyboard, Cinematographer agents), Houdini 3D procedural scene construction, diffusion-based video generation, and a VLM + physics feedback loop for iterative self-refinement. Built in Python 3.11 using OpenAI API, Pydantic structured outputs, async orchestration, and a subprocess bridge integrating Houdini's Python 3.9 environment.

MA Digital Effects - National Centre for Computer Animation, Bournemouth University, UK (2011) Modules: 3D simulation, rigid body dynamics, scripting, shader writing, particle systems, camera matching, compositing, Houdini procedural tools. *Dissertation: The Nature of Houdini Rigid Body Dynamics.*

BSc Computer Science (Technology) - Babcock University, Nigeria (2008) Modules: Algorithms, Data Structures, AI, Signal Processing, Computer Networks (CCNA), Assembly Language, Compiler Construction, Computer Architecture, Digital Electronics, Software Engineering.

PROFESSIONAL EXPERIENCE

Simulation & Pipeline Technical Director

10+ years across studios in Canada and the UK (2013-2025)

Canada - Digital Domain (Vancouver & Montreal), Outpost VFX (Montreal), Belo FX (Montreal), Image Engine (Vancouver), Sony Pictures Imageworks (Vancouver), Goldtooth Creative (Vancouver), Embassy VFX (Vancouver) **UK** - DNEG (London)

Worked as a Senior FX Technical Director on over 35 major productions. Key technical responsibilities included:

- **Physics simulation at scale:** Designed and deployed large-scale rigid body destruction, FLIP fluid, pyro, and constraint-based simulation systems, optimising for physical accuracy and compute efficiency on render farms of thousands of nodes

- **Rendering and GPU workflows:** Worked across multiple renderers in production (Arnold, Mantra, Redshift, PRMan, Karma), with hands-on shader authoring and physically-based lighting integration
- **Procedural tool development:** Authored reusable Houdini Digital Assets (HDAs) and Python/VEX tooling to accelerate workflows and improve pipeline consistency across departments
- **C++ and Python scripting:** Wrote production pipeline tools, custom solvers, and workflow automation scripts; contributed to studio-level pipeline infrastructure
- **Cross-discipline technical collaboration:** Worked across rendering, lighting, compositing, and pipeline engineering departments, bridging simulation output with downstream production stages
- **Research and development:** Evaluated and implemented new simulation and rendering techniques; adapted cutting-edge approaches to production-ready tools under deadline pressure

Selected productions: Black Panther: Wakanda Forever · Spider-Man: No Way Home · Mission: Impossible - Dead Reckoning · Netflix's Avatar: The Last Airbender · Fast X · The Acolyte · Interstellar · Fantastic Beasts · Godzilla (35+ IMDb credits total)

KEY PROJECTS (AI / ML)

Dissertation - Scene-Aware Intelligent Video Generation (MSc, 2025-2026) Five-layer pipeline: multi-agent CoT planning, Houdini 3D scene construction, diffusion-based video generation, and VLM + physics validation feedback loop. Implements structured inter-agent data contracts via Pydantic, async orchestration, and subprocess bridge pattern for cross-Python-version Houdini integration. Research contribution: first system combining intelligent planning, physics-grounded simulation, and iterative self-evaluation in a unified cinematic generation pipeline.

FlyMate - Agentic AI Travel Booking System (Contemporary Computing & Digital Technologies, 2025) Multi-agent conversational booking agent using Flowise AgentFlow, integrating Amadeus (flights/hotels, OAuth2), Foursquare (locations), and Stripe sandbox (payments). Led workflow architecture design, API integration, and complex conditional routing logic debugging including node ID reference resolution and HTML tag contamination fixes.

Sentiment Analysis Pipeline (Programming for AI, 2025) End-to-end NLP pipeline on app review data: text preprocessing (regex, tokenisation, lemmatisation), TF-IDF and Word2Vec feature engineering, VADER baseline with custom thresholds, four ML classifiers (Logistic Regression, SVM, Naive Bayes, XGBoost), comparative evaluation achieving up to 81.6% accuracy.

IoT Monitoring System (AI for IoT, 2025) Workspace monitoring system using Arduino hardware with Edge Impulse for on-device ML model training and deployment, and ThingSpeak for IoT data streaming and cloud-based visualisation.

WHAT SETS THIS PROFILE APART

This profile combines three things most candidates can only offer one of: 10 years shipping physics simulation systems at the highest level of commercial production; formal AI/ML training at postgraduate level spanning multi-agent systems, diffusion models, NLP, supervised ML, and agentic workflow design; and hands-on experience building production-grade API integrations and IoT pipelines. Particularly well-suited to roles in neural simulation, physics-informed ML, AI-assisted creative tooling, neural rendering, agentic systems, NLP engineering, or generative AI for media production.

LANGUAGES

English (native fluency), Yoruba

LINKS

Website: tosinakinwoye.com LinkedIn: uk.linkedin.com/in/akinwoyet IMDb: imdb.com/name/nm6035150 VFX Showreel: vimeo.com/toris/vfxreel